

**REMARKS**

This Amendment is filed in response to the final rejection dated September 10, 2003. This amendment should be entered, the application allowed, and the case passed to issue. No new matter or considerations are raised by this amendment. This amendment should be entered as it clarifies an informality raised by the Examiner in the final rejection and clearly places the application in condition for allowance. If this application is not allowed, Applicant submits that the amendment should be entered as it reduces the issues for appeal.

Claims 3-5 are pending in this application. Claim 4 is allowed. Claims 3 and 5 are rejected.

***Claim Rejection Under 35 U.S.C. § 112***

Claim 3 is rejected under 35 U.S.C. § 112, first and second paragraphs, because the specification allegedly does not appear to describe a "an amplifier circuit for amplifying a fine signal and a single channel height analyzer circuit for selecting only a pulse with a particular height to estimate an energy spectrum of the  $\alpha$  rays with the aid of counting or by measuring peak height distribution using a current flowing through said PN junction." In addition, the Examiner asserts that the terms "fine" and "pulse" are unclear. Further, the Examiner considers it unclear how "selecting only a pulse with a particular height" is related to "counting" or "measuring peak height." Furthermore, the Examiner alleges that the specification does not clearly describe the claimed analyzing circuit. This rejection is traversed, and reconsideration and withdrawal thereof respectfully requested.

An aspect of the present invention, per claim 3, is a semiconductor device for detecting neutrons comprising a semiconductor substrate and a boron containing layer formed on the semiconductor substrate containing isotope  $^{10}\text{B}$ . A PN junction is formed on a surface area of the semiconductor substrate below the boron containing layer. Electron - positive hole pairs are generated in a depletion layer of the PN junction by  $\alpha$  rays generated by a reaction between the neutrons and the isotope  $^{10}\text{B}$ . The neutrons are detected on the basis of the quantity of electric charge of the electron - positive hole pairs. The semiconductor device further comprises an analyzing circuit portion on the semiconductor substrate in a region other than the region where the neutrons are detected. The analyzing circuit portion includes an amplifier circuit for amplifying a signal and a single channel height analyzer circuit for selecting only a pulse with a particular height to estimate an energy spectrum of the  $\alpha$  rays with the aid of counting or by measuring peak height distribution using a current flowing through the PN junction

In response to the Examiner's assertion that the scope of "fine" is unclear, "fine" has been deleted from claim 3. In response to the Examiner's assertion that "pulse" is unclear, Applicant submits that it is clear that a pulse is a pulse of current, as explained in the instant disclosure (Specification at page 6, lines 9-11).

Selecting only a pulse with a particular height is related to counting current pulses and measuring the peak height distribution of the current pulses. Current pulses are amplified on the basis of the amount of electric charges collected from the depletion layer. A single channel height analyzer circuit selects only a pulses with a particular height and the current pulses with a particular height are counted or the peak height distribution of the current pulses is measured. Applicant submits that it would be clear to

one of ordinary skill in this art how selecting only a pulse with a particular height is related to counting or measuring peak height distribution.

The specification describes the semiconductor element to estimate an energy spectrum of the  $\alpha$  rays on page 6, particularly lines 2-15 and the components of a circuit to estimate an energy spectrum of the  $\alpha$  rays on page 3, lines 21-28

The Supreme Court set the standard for determining whether the specification meets the enablement requirement. That standard is whether undue experimentation is needed to practice the invention. *Mineral Separation v. Hyde*, 242 U.S. 261, 270 (1916); *In re Wands*, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404, (Fed. Cir. 1988); MPEP 2164.01. Applicant submits that in light of the instant disclosure, one of ordinary skill in this art would be able to make and use the claimed invention. In particular, Applicant submits that one of ordinary skill in this art would recognize that the amplifier circuit and the single channel height analyzer estimate an energy spectrum of  $\alpha$  rays, and one of ordinary skill in this art would be able to make and use the analyzing circuit portion that estimates the energy spectrum.

There are many factors that an Examiner must consider when reaching a conclusion of lack of enablement. These factors include:

- (A) The breadth of the claims;
- (B) The nature of the invention;
- (C) The state of the prior art;
- (D) The level of one of ordinary skill;
- (E) The level of predictability in the art;
- (F) The amount of direction provided by the inventor;

- (G) The existence of working examples; and
- (H) The quantity of experimentation needed to make or use the invention based on the content of the disclosure.

*Wands*, 858 F.2d at 737; 8 USPQ2d at 1404.

The Examiner's analysis of enablement must consider all the evidence related to each of these factors. Focusing on one or only several of the factors is not sufficient to determine whether an invention is not enabled. MPEP § 2164.01(a). There is no indication in the Office Action that the Examiner considered the above factors in reaching the conclusion of lack of enablement.

In order to make a rejection for lack of enablement, the Examiner has the initial burden to establish a reasonable basis to question the enablement provided for the claimed invention. *In re Wright*, 999 F.2d 1557, 1562, 27 USPQ2d 1510, 1513 (Fed. Cir. 1993). The examiner must provide a reason as to why the scope of protection provided by a claim is not adequately enabled by the disclosure. A specification disclosure which contains a teaching of the manner and process of making and using an invention in terms which correspond in scope to those used in describing and defining the subject matter sought to be patented must be relied on for enabling support. See *In re Marzocchi*, 439 F.2d 220, 224, 169 USPQ 367, 370 (C.C.P.A. 1971); MPEP § 2164.04. Applicant submits that one of ordinary skill in this art would know how to make and use the invention of claim 3 in light of the instant disclosure. The Examiner has not shown that the invention of claim 3 is not enabled for one of ordinary skill in this art. Applicant submits that claim 3 fully comports with the requirements of 35 U.S.C. § 112.

The Examiner avers that the specification does not clearly describe the analyzing circuit. However, the Examiner has the burden of showing that one of ordinary skill in this art would not know how to make the analyzing circuit portion, which includes an amplifier circuit for amplifying a signal and a single channel height analyzer circuit for selecting only a pulse with a particular height to estimate an energy spectrum of the  $\alpha$  rays with the aid of counting or by measuring peak height distribution using a current flowing through the PN junction. Applicant submits that one of ordinary skill in this art, such as a circuit designer, would have known how to make the claimed circuit at the time of the invention. “Detailed procedures for making and using the invention may not be necessary if the description of the invention itself is sufficient to permit those skilled in the art to make and use the invention.” MPEP § 2164. Therefore, Applicant submits that claim 3 is enabled, as one of ordinary skill in this art would know how to make the claimed analyzing circuit portion.

The Examiner notes out that “[t]he response provided no evidence related to factors C through H that the specification would enable any person skilled in the art to make the circuit . . . .” However, as explained above, the Examiner must prove that the invention does not meet the enablement requirement. As the Examiner has not met the burden of proving the invention is not enabled, Applicant submits the rejection under 35 U.S.C. § 112 should be withdrawn.

***Allowable Subject Matter***

Claim 4 is allowed. Applicant gratefully acknowledges the indication of allowable subject matter.

Applicant submits that claims 3 and 5 are allowable as claim 3 is rejected only under 35 U.S.C. § 112, first and second paragraphs. Applicants have amended claim 3 and explained why it is definite, and the Examiner has failed to meet the burden of proving that claim 3 is not enabled by the instant specification.

In light of the amendments and remarks, this amendment should be entered, the application allowed and the case passed to issue. If there are any questions regarding these remarks or the application in general, a telephone call to the undersigned would be appreciated to expedite prosecution of the application.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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